

practice, if an individual criticized attempts to maintain his thesis, that individual must be very certain of his ground."

Professor Fernald's has been a many-sided contribution to botany in spite of his ostensibly specialized field of activity. Throughout his work he was imaginative and had the stamina and singleness of purpose to follow through in his research studies to their logical fruition. His published work stands on its own merit but botany has lost an ardent and sometimes militant individualist of great vigor, keen insight and strong devotion to his chosen field.

FERNALD IN THE FIELD

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MANY people intensely enjoy watching others do something superlatively well. This enjoyment is greatly enhanced should the technique or field of activity impinge on one's own interest and requirements. It is part of a happy and very fortunate life that it has been my privilege to be afield with the world's greatest field botanists and ornithologists, and I have reflected for some time on the combination of assets and talents required to produce such an exceptional human being. In the ensuing discussion it must be understood that my friend, the late M. L. Fernald, possessed the necessary qualifications to an astonishing degree.

The principal objective of the field botanist is to find and collect in quantity plants of some critical or scientific interest. This obviously involves getting away from civilization and disturbed areas, and may even involve protracted camping, mountain climbing, or the organization of a real expedition, with numerous personnel, guides, porters and problems of transportation. This presupposes the necessary rugged *physique*. The legs must be stout, the back must be strong to carry a pack, the wind must be good, and *the eyesight must be remarkably keen*. Fernald might be described as a short, stout man, with short legs. In the Shick-shock Mountains of Gaspé I had occasion to marvel at his ability to cope with the demands made on his physique, and at the same time, to feel very sorry for another old friend and companion with short legs, the late K. K. Mackenzie, whose heart could not stand the strain of mountain climbing, soon to die prematurely

of this defect. Fernald's keenness of eyesight was prodigious. By train his face was glued to the window, by car he hung as far out as safety permitted, constantly scanning the passing banks and roadsides, calling "stop" when something suspicious was sighted, and usually to good purpose. This was his pet method of turning up unusual weeds. It is trite to mention his indifference to extremes of heat, cold, wet, and insect pests.

Another must for a great field botanist is a memory for facts, so fabulous as to be completely beyond the capacity of the average person. Most local floras involve 2000 or more species. Think of the facts involved in committing to memory, almost perfectly, the characters in the descriptions of such a flora, even the most technically difficult genera such as *Viola* and its hybrids, *Carex*, the willows (*Salix*) in the far northeast. Moreover, the ranges must be accurately recalled, so as to pounce at once on any possible range extensions in the field. To illustrate, I remember one mortifying incident. Long interested in orchids, I was, so I thought, very familiar with *Habenaria Hookeri* Torr., so when I picked some, up in Gaspé, I thought little of it. But you should have seen Fernald jump when I mentioned it; he immediately recognized it as a range extension and made me go back to relocate the station to procure more material for the whole party!

Few people stop to think that a sense of location or place-memory is a great asset. Fernald had one of the most marvellous of any human being I have ever known, and his ability to return after many years to the station of some rare plant bordered on the incredible. Two illustrations must suffice. On the table-top of Mt. Albert I was particularly anxious to "clean up" on the great and local rarities, notably *Polystichum mohrioides* (Bory) Presl var. *scopulinum* (D. C. Eat.) Fern., the only eastern station. Speaking to Fernald, whose generosity and interest were notable, he reflected a moment. It required *crossing* the entire *tableland*, to find the right gulch or ravine on the opposite face of the mountain, where he had been once previously. Crossing the mountain and hitting the first gully by chance, Fernald said "wait a minute," and disappeared downwards, shortly to reappear, saying it was not the right one and he believed the one we were seeking was further to the left. So, to the left we tramped

and the next gully "began to look right." We were told to look for a big patch of July snow. There *was* such a snowpatch, and in a few minutes Fernald relocated the famous station. Only once did I see Fernald at fault. I had never collected *Scirpus Peckii* Britt., and recalled a sheet in the Gray Herbarium collected by Fernald at Alstead, N. H. He claimed to remember it well and volunteered to make a try at finding the station. So one day we took a long and rambling trip around the changed village of Alstead, while Fernald tried to recall the location of a moist swale, one of many in the hollow of some farming uplands. It could not be done. The point is that Fernald was clearly chagrined and mortified, in spite of the fact that *thirty-five* years had passed. I could not console him on the way home as he felt he had completely wasted my day, and he earnestly promised to make it up to me. He did, bless him, over and over again.

Long before I met Fernald or was in the field with him, I knew him by reputation as the great authority on the flora of New England, the Maritime Provinces of Canada, and Newfoundland. I therefore expected and was prepared for all the assets and qualifications outlined above just as I had found them in the late Dr. Karl M. Wiegand, who was just as sensational in his knowledge of the flora of the Cayuga Lake Basin, a more restricted area. The great question now arises, how does such a person perform in a new or unknown flora? This I was able to answer, as I was largely responsible for getting Fernald out of New England and well started on his field work in extreme southern and southeastern Virginia, handicapped as he was by having by-passed the famous pine-barren flora of New Jersey. One fine morning we left Cambridge at 5:30 a. m. and rolled the car on the ferry that night at Cape Charles, Va., 605 miles south. The results of the trip were written up in *RHODORA*, Vol. 37, under the title "Three days botanizing in southern Virginia." This field work, which continued with the aid of the greatly gifted Mr. Bayard Long, was delightfully written up in *RHODORA*, with many revisions and range extensions into the Manual area. Here we reach the final asset of a great field man, who does not know the flora, and who has never seen the plants growing before. The gift of a somewhat photographic memory combined with extensive reading plus the study of herbarium specimens, enabled

Fernald to recognize, spot, or at least suspect most of the well known southern element.

How well I recall joining a party in northern Newfoundland led by Fernald and Wiegand. There was a pleasant party rivalry at the time, each trying to spot the most novel, new, suspicious or interesting plants per day per trip. Wiegand did not do very well, and confided his chagrin to me, a former student, privately. Wiegand's summing up was perfectly fair, just and reasonable: "He did *not* know the arctic flora," and had had no time to study or bone up on it. One graphic illustration of the opposite faculty occurs to me. While the point could be debated among botanists indefinitely, it has always seemed to me that the hardest plants to "spot" are certain low growing shrubs minus flowers, buds, or fruit, when they become as nearly characterless as possible. Such a plant is the rare and local *Stewartia Malacodendron* L., minus the huge showy flowers or the prominent 5-locular capsule. I was just good enough to "spot" this low shrub in the rich welter of vegetation in a moist ravine of southern Virginia, and called it to Fernald's attention. I was electrified when he gave a cry of pleasure and immediately named it! I still haven't figured out how he did it!

In the field Fernald was noted for a kindly, sunny cheerfulness of temperament, good humor, a tendency to bad puns, and an optimism which sometimes discommoded his party. The guides and boatmen proved to be mortal and human, the landlady and food were not as wonderful as represented in advance, in short, the Golden Age was never quite attained on my last trip with him! He was kindness and patience itself to a ham amateur ornithologist like myself, but an unsparingly caustic critic of all entitled to be called botanists. In certain ways he was almost amazingly modest and unconscious of his gifts. Thus his discoveries in southern Virginia, far from puffing up his self esteem, were invariably represented as a reflection on the lack of energy and drive of the Washington, D. C., botanists, who "could have run down there in a day anytime they got around to it."

Actually it should be clear that this greatly gifted field botanist can be described as a one-pointed, one-sided botanical machine. Fernald lived, thought, and talked botany. In very bad weather, he would invent work with the presses, changing the driers, etc.

If there was nothing to do, Fernald would pick up a novel and in half an hour was sound asleep! I never knew him to finish one! The impact on other people was entirely a measure of their interest in or knowledge of botany. It went hard with them indeed if both were inadequate, and under the inevitable strain and fatigue they tended to lose sight completely of the great gifts their leader possessed so outstandingly. In addition to the strain of camping life, the constant physical exercise and discomfort, there is a terrible, grinding monotony to the constant pressing of 1000 sheets a week, the changing of the driers, the straightening of the material, the psychological impact of overwhelming and irreducible inferiority of knowledge. Some people could not endure it.

Nevertheless, as I look back on my trips with him over a fifteen year period, as I thumb through the new Gray's Manual, which happily he lived to see finished and out, and as I write these lines, there are tears of gratitude in my eyes, gratitude that I had the opportunity to see him as much as I did, and get to know him so well, to appreciate his extraordinary gifts. The reason why has just come to me upon reflection. As a professional field man, he had all the qualifications I wish I had myself, but never acquired as an amateur. Hence I admire, respect, and esteem his memory, and rejoice at the vision he gave me.

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